channel **198** when pulse-activated. Electrical device **216** may be a thin-film heater or a piezoelectric element, among others. Thin-film device may exert a force transverse to channel **198**, that is, transverse to a default path **220** along which the cells travel. The force may be directed selectively toward passage **214**, from an opposing passage **222**, by the use of fluid diodes **224**. The fluid diodes may be any conduit structure that selectively restricts flow in one direction, for example, upward from channel **198** in the present illustration. Other exemplary fluid diodes that may be suitable are included in U.S. Pat. No. 4,216,477 to Matsuda et al., which is incorporated herein by reference.

[0051] Fluid moved by a pressure pulse from transport mechanism **212** may be supplied by feed hole **184***e*, which communicates with second manifold conduit **186***b*, or from a separate fluid source. The pressure pulse may displace cell **132** from upper channel **198** to lower channel **200**. The cell then may join fluid flowing in channel **200** to exit at feed hole **184***d*.

[0052] **FIG. 7** shows a sectional view of the sorter unit **182** and adjacent regions of sorter device **150**. Substrate assembly **112** may adjoin manifold **120**, particularly a first manifold layer **240** that defines first manifold conduit **186***a*. A second manifold layer **242** may be spaced from the substrate assembly.

[0053] Substrate assembly **112** may include substrate **180**, thin-film layers **244** formed adjacent the substrate's surface (in or on the substrate), and fluid barrier **196** connected to the substrate and thin-film layers. The thin-film layers may define electrical portion **136** of the substrate assembly, particularly thin-film electrical devices **140** thereof. Fluid barrier **196** may be formed unitarily or, as shown in the present illustration, may be formed of a channel layer **246**, and a cover layer **248**. The channel layer may define walls **250** of channel **198**. Channel layer **246** may be formed from any suitable material, including, but not limited to, a negative or positive photoresist (such as SU-8 or PLP), a polyimide, a dry film (such as DuPont Riston), and/or a glass. Methods for patterning the channel layer **246** may include photolithography, micromachining, molding, stamping, laser etching, and/or the like. Cover layer **248** also may define a wall of channel **198**. The cover layer may be formed of an optically transparent material, such as glass or plastic, to permit light from the light source to enter channel **198**.

[0054] **FIG. 8** shows a bottom view of first manifold layer **240** of manifold **120**. Manifold layer **240** may include a plurality of openings **260** extending through the manifold layer and aligned with manifold conduits, such as first-layer manifold conduits **186***a-d* defined by grooves **262** of the first manifold layer in abutment with substrate **180** (see **FIG. 5**). Accordingly, openings **260** are disposed in fluid communication with columns **185** of feed holes **184** (see **FIG. 5**) via the first-layer manifold conduits.

[0055] **FIG. 9** shows a bottom view of a second layer **242** of manifold **120**. Second layer **242** may include second-layer openings **270** extending through the second layer from grooves **272** formed in the second layer. Each groove **272** may be configured to be aligned with a row of first-layer openings **260** from first manifold layer **240** (see **FIG. 8**). First-layer openings **260** are shown in phantom outline in this view to simplify the presentation. Each groove **272** may form a second-layer conduit **274** by abutment of the first and second manifold layers. Each second-layer conduit **274** may provide fluid communication between a row of first-layer openings **260** and thus a plurality of corresponding columns of feed holes **184** in the substrate (see **FIG. 5**).

[0056] **FIG. 10** shows a sectional view of manifold **120** of sorter device **150**. Fluid may travel from columns of substrate feed holes (see **FIG. 5**), through first-layer conduits **186**, and then through a second layer conduit **274** to tubing **170**.

[0057] The devices and methods described herein may be microfluidic devices and methods. Microfluidic devices and methods receive, manipulate, and/or analyze samples in very small volumes of fluid (liquid and/or gas). The small volumes are carried by one or more passages, at least one of which may have a cross-sectional dimension or depth of between about 0.1 to 500 μm, or less than about 100 μm or 50 μm. Accordingly, fluid at one or more regions within microfluidic devices may exhibit laminar flow with minimal turbulence, generally characterized by a low Reynolds number. Microfluidic devices may have any suitable total fluid capacity.

[0058] It is believed that the disclosure set forth above encompasses multiple distinct embodiments of the invention. While each of these embodiments has been disclosed in specific form, the specific embodiments thereof as disclosed and illustrated herein are not to be considered in a limiting sense as numerous variations are possible. The subject matter of this disclosure thus includes all novel and non-obvious combinations and subcombinations of the various elements, features, functions and/or properties disclosed herein. Similarly, where the claims recite "a" or "a first" element or the equivalent thereof, such claims should be understood to include incorporation of one or more such elements, neither requiring nor excluding two or more such elements.

What is claimed is:

1. A device for sorting particles in parallel, comprising:

an input reservoir configured to hold a mixture of first particles and one or more second particles;

a transport mechanism configured to move portions of the mixture in parallel from the input reservoir; and

a plurality of sorter units in fluid communication with the input reservoir and configured to receive the portions of the mixture, each sorter unit being configured to selectively move at least one second particle, if received in one of the portions, from a path followed by first particles received in the one portion so that the at least second particle follows a different path.

2. The device of claim 1, further comprising a manifold configured to place the input reservoir in fluid communication with the sorter units.

3. The device of claim 2, wherein the manifold defines a conduit network that branches as it extends from the input reservoir to the sorter units.

4. The device of claim 1, wherein the transport mechanism is configured to provide continuous transport of the portions of the mixture, and wherein each sorter unit includes a pulse-activated transport mechanism configured to selectively move the at least one second particle.